

FIVE NEW SPECIES OF *VERBESINA* FROM THE
NORTHERN ANDES (HELIANTHEAE; ASTERACEAE)

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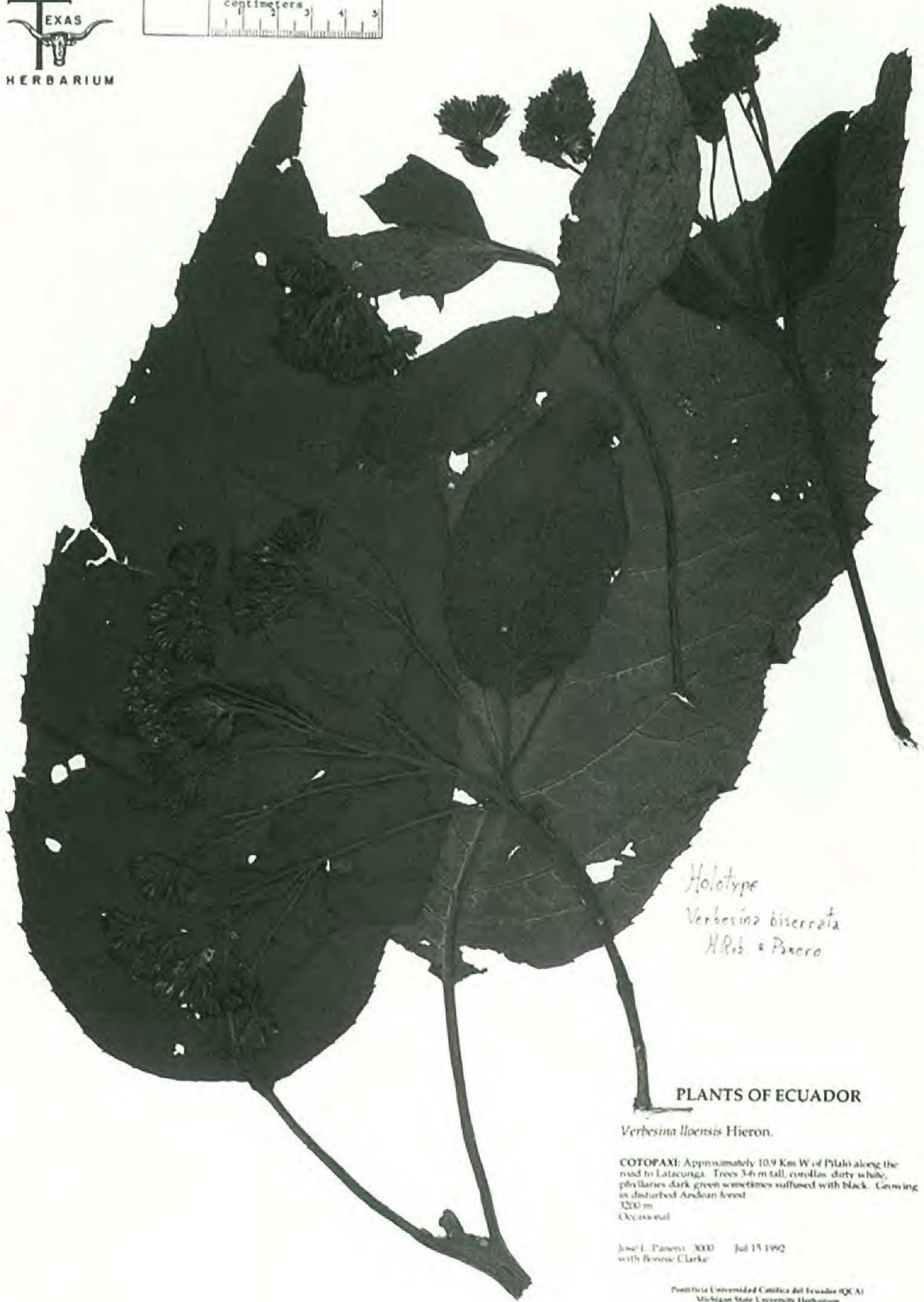
ABSTRACT. Five new species of *Verbesina* are described, *V. biserrata*, *V. clarkae*, *V. maldonadoensis*, and *V. pichinchensis* all from Ecuador, and *V. perijaensis* from Colombia.

Key Words: *Verbesina*, new species, Heliantheae, Asteraceae, Ecuador, Colombia, Northern Andes

Studies in the Heliantheae of the northern Andes, mostly for the *Flora of Ecuador*, have resulted in the discovery of the following five undescribed species of *Verbesina*. The species are in addition to the over 200 species already known in the New World genus *Verbesina* (Olsen 1985). The four Ecuadorian species are in addition to the 18 listed for Ecuador in Jørgensen and León-Yáñez (1999). The Colombian species is in addition to the ca. 25 already known from that country (including those of Díaz-Piedrahíta 1985). A number of the following species are distinguished by rays being white, yellow, or lacking, and they would potentially fall within the artificial sections *Leucactinia*, *Ochractinia*, or *Lipactinia*, but these sections are not recognized here. For a partial discussion of some of past artificial segregates in *Verbesina* see Blake (1925). Most of the true diversity of the genus seems to be centered in Mexico.

Verbesina biserrata H. Rob. & Panero, *sp. nov.* TYPE: ECUADOR. Prov. Cotopaxi: approximately 10.9 km W of Pilaló along road to Latacunga, 3200 m, 15 Jul 1992, *J. Panero & B. L. Clark 3000* (HOLOTYPE: TEX; ISOTYPE: QCA). Figure 1.

In habitus ad *Verbesinam lloensem* superficialiter simila sed in foliis oppositis valde biserratis et floribus radii nullis differt. In



Holotype
Verbesina biserrata
 H. Rob. & Panero

PLANTS OF ECUADOR

Verbesina lloensis Hieron.

COTOPAXI: Approximately 10.9 Km W of Pilalo along the road to Latacunga. Trees 3-6 m tall, corollas dirty white, phyllaries dark green sometimes suffused with black. Growing in disturbed Andean forest. 3200 m. Occasional.

Jose L. Panero: 3000 Jul 15 1992
 with Bonnie Clarke

Plantia Universidad Católica del Ecuador (QCA)
 Michigan State University Herbarium

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Figure 1. *Verbesina biserrata* H. Rob. & Panero, holotype, Herbarium of the University of Texas (TEX).

foliis oppositis ad *V. rivettii* et *V. pichinchensem* proximius sed in caulibus puberulis et marginis foliorum distincte biserratis et foliis subtus sparce tomentellis et floribus radii omnino nullis et

floribus disci 20–25 et corollis sordide albis praeter in lobis nigrescentibus distincta.

Trees 3–6 m tall; stems brownish, terete, striate, without wings, minutely brownish puberulous. Leaves opposite, with petioles 1–8 cm long, upper leaves sometimes narrowly winged to base; blades of lower leaves oblong-ovate, to 30 cm long, 14 cm wide, with rounded base, upper leaves ovate-elliptical, 6–15 cm long, 3–6 cm wide, with base acute or acuminate, margins doubly serrate, often serrulate or with minute mucronate dentations in upper leaves, apex acute, upper surface sparsely pilose, lower surface thinly tomentellous, pale yellowish, not obscuring green surface except on immature leaves, denser and brownish on veins; veins pinnate or slightly subpinnate, with 6–9 ascending veins on each side, basal veins of larger leaves more spreading. Inflorescence terminal on leafy branches, broadly corymbiform; primary branches mostly opposite, ascending, densely puberulous with sordid hairs. Heads 10–12 mm high, ca. 7–9 mm wide; involucre bracts ca. 18, dark green to brown, narrowly oblong, flat, 4–8 mm long, 1.5–2.5 mm wide, rounded at tip, puberulous with pale hairs outside; pales similar to inner involucre bracts, acute, ca. 8 mm long. Ray florets lacking. Disk florets 20–25; corollas sordid white, blackish on lobes, ca. 7 mm long, pilosulous on tube, with few hairs on lobes, tubes ca. 1.8 mm long, throat ca. 4.5 mm long, lobes ca. 1 mm long, with fringe of long papillae on inner margins; anther thecae black, ca. 2.5 mm long; apical appendage black, ca. 0.6 mm long, 0.35 mm wide. Cypselas immature, ca. 4 mm long, glabrous on sides, few small setulae along upper margins, with wings not expanded; awns of pappus straight, ca. 6 mm long.

Verbesina biserrata is known only from the type collection. The plant was found in Cotopaxi at 3200 m in disturbed Andean forest. The species superficially resembles *V. lloensis* Hieron., but differs by the opposite, strongly serrate leaves and lack of ray florets. The species is probably more closely related to other primarily opposite-leaved species such as *V. rivettii* S. F. Blake to the north and *V. pichinchensis* to the south, both of which have dense tomentum on the leaf undersurfaces and have some ray florets.

Verbesina clarkae H. Rob. & Panero, *sp. nov.* TYPE: ECUADOR.

Prov. Carchi: 10.4 km E of Julio Andrade along road to El

Carmelo and El Aljún, around town of El Aljún, 2880 m, 21 Jul 1992, *J. Panero & B. L. Clark 3040* (HOLOTYPE: US; ISOTYPES: QCA, TEX). Figure 2.

In radiis albis brevibus et caulibus puberulis vel glabrescentibus ad *Verbesinam maldonadoensem* simila sed in capitulis majoribus in floribus radiis ca. 8 et in bracteis involucri ca. 22 differt.

Shrubs or small trees 4–10 m tall, moderately branched; stems terete, unwinged, brownish, puberulous, glabrescent. Leaves alternate, petioles distinct, unwinged, 3.5–9.0 cm long; blades ovate, 18–28 cm long, 10–15 cm wide, base obtuse with short acumination, margins remotely and minutely denticulate, apex broadly acuminate, upper surface minutely scabridulous, lower surface densely pale hirtellous, denser and more brownish on veins; venation pinnate, with 8–10 veins on each side, lowest secondary veins narrower, closer, spreading at ca. 90°. Inflorescence from apices and upper axils of leafy branches, broadly corymbiform cymes with many heads, ca. 30 cm wide and high; peduncles 3–18 mm long, densely brownish hirtellous with broad-sharp hairs. Heads campanulate, 10–12 mm high; involucre 7–8 mm wide; involucre bracts ca. 22 in ca. 3 graduated series, narrowly oblong, 2–7 mm long, 1.0–1.3 mm wide, apices obtuse, densely puberulous with pale hairs outside; pales similar to inner involucre bracts, ca. 8 mm long. Ray florets ca. 8; corollas white, sometimes with tinge of yellow, tube and tip of limb pilosulous, tube 1.3 mm long, limb ca. 3.5 mm long, 1.3 mm wide. Disk florets ca. 20; corollas whitish yellow, 6.0–6.8 mm long, pilosulous throughout, sparsest on middle of throat, tube ca. 1.8 mm long, throat 3.8–4.0 mm long, lobes ca. 1 mm long, with dense fringe of long papillae on inner margin; anther thecae black, 2.5 mm long; apical appendage black, 0.5 mm long, ca. 0.3 mm wide. Cypselas immature; ray cypselas ca. 3 mm long, with single outer awn ca. 3 mm long; disk cypselas ca. 3.8 mm long, essentially glabrous, wings not expanded, pair of pappus awns ca. 6 mm long.

The new species is named for the co-collector on the 1992 expedition, Bonnie L. Clark, previously a student of Ted Barkley at Kansas State University, more recently of Shawnee Mission, Kansas.

Verbesina clarkae is known only from the type locality. The

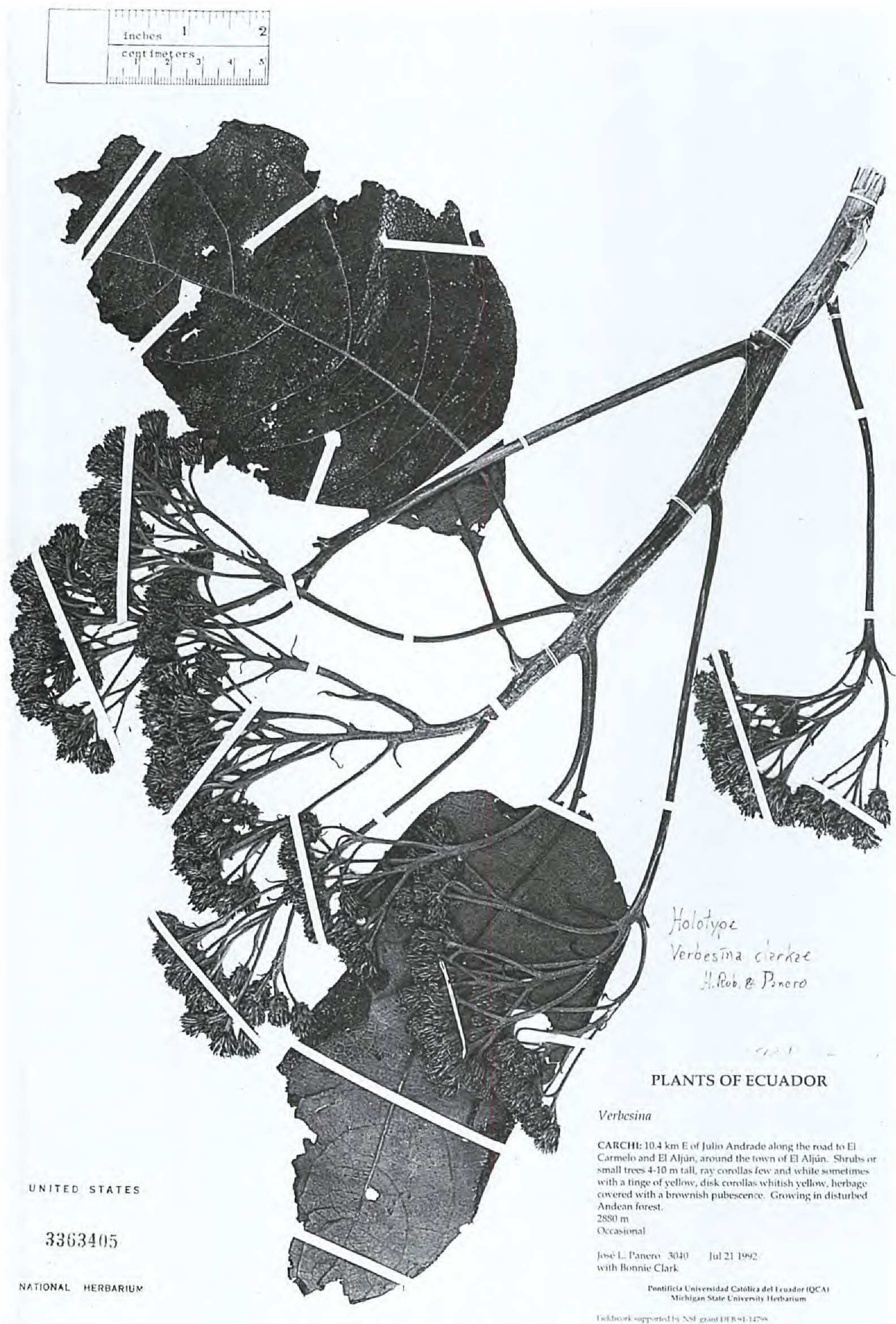


Figure 2. *Verbesina clarkae* H. Rob. & Panero, holotype, United States National Herbarium (US).

species occurs in easternmost Carchi at 2880 m in disturbed Andean forest. It is one of the few species in Ecuador in which white rays are present. The closest relative is probably *V. maldonadoensis* of eastern Carchi, but the present species has larger heads with more numerous florets, ca. 8 ray florets and ca. 20 disk florets. The rays have small limbs, and their number is distinctive within Ecuador. A possibly closely related Colombian species from Dept. Valle is *V. barragana* Cuatrec., but the latter has lanuginose pubescence on the stems, more lanceolate leaves, and five or fewer ray florets with limbs 7 mm long.

Verbesina maldonadoensis H. Rob. & Panero, *sp. nov.* TYPE: ECUADOR. Prov. Carchi: 9 km E of Maldonado, ca. 55 km W of Tufiño along road Maldonado–Tufiño–Tulcán, 2100 m, small trees to 7 m tall, corollas whitish, growing in disturbed Andean forest, 20 Jul 1992, *J. Panero & B. L. Clark 3035* (HOLOTYPE: US; ISOTYPES: QCA, TEX). Figure 3.

In radiis albis brevibus et caulibus puberulis vel glabrescentibus ad *Verbesinam clarkae* simila sed in capitulis minoribus in floribus radiis ca. 3 et bracteis involucri ca. 14 distincta.

Shrubs to 7 m tall, moderately branched, with brownish hairs; stems brown, terete to slightly angled, without wings, slightly deflected at nodes, minutely puberulous or with sparse arachnoid hairs; internodes mostly 2–3 cm long. Leaves alternate, petioles 2–8 cm long, 1/5 to more than half as long as blade, unwinged; blades elliptical, 10–17 cm long, 3–8 cm wide, base acute to slightly acuminate, margins minutely mucronate-serrulate except near base, apex short and narrowly acuminate, upper surface dark, minutely pilosulous, densely hirtellous on veins, lower surface densely pilosulous, subtomentellous on veins; secondary veins pinnate, ca. 8 on each side, spreading at ca. 55°, arched before margins. Inflorescence from apices and upper axils of leafy branches, broadly flat-corymbiform, with many heads, ca. 25 cm high and wide; peduncles 1–12 mm long, densely hirtellous. Heads narrowly campanulate, 5–6 mm high; involucre 3–4 mm wide; involucral bracts ca. 14, in ca. 3 graduated series, narrowly oblong, 1.5–4.0 mm long, 0.5–1.2 mm wide, apices acute, thinly herbaceous, pilosulous outside; pales greenish on keel and distally, elliptical-lanceolate, 5.0–5.5 mm long, ca. 1 mm wide, pilosulous distally on keel. Ray florets ca. 3; corollas white, tube ca. 1.5 mm long, pilosulous, limb oblong, ca. 4 mm long, 1.5–

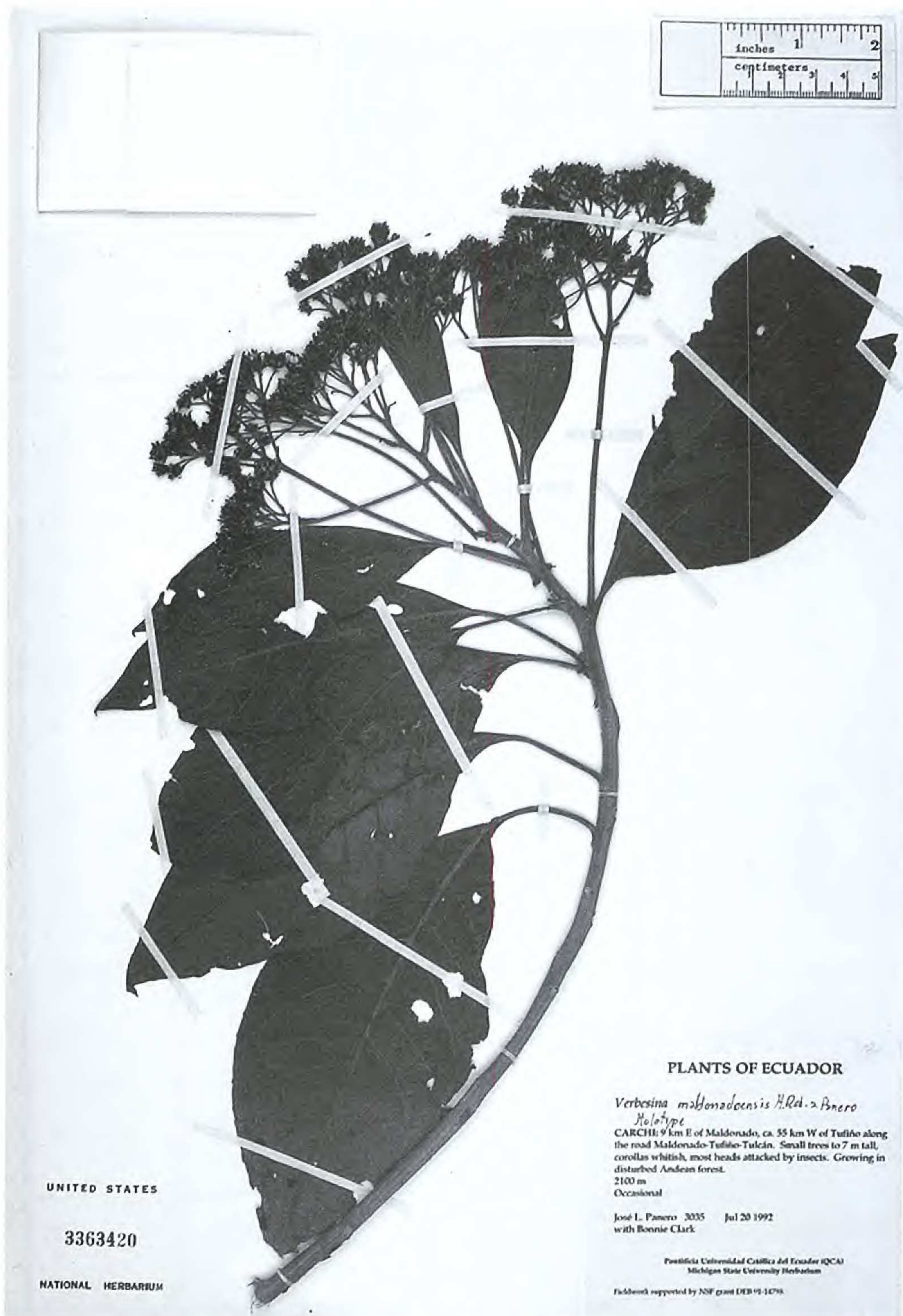


Figure 3. *Verbesina maldonadoensis* H. Rob. & Panero, holotype, United States National Herbarium (US).

2.0 mm wide. Disk florets 8–12; corollas yellowish, ca. 4.5 mm long, pilosulous on tube and lobes, tube ca. 1 mm long, throat ca. 2.5 mm long, lobes ovate-oblong, ca. 0.8 mm long, with dense fringe of long papillae on inner margin; anther thecae black, ca. 1.8 mm long; apical appendage yellowish distally, ca. 0.35 mm long, ca. 0.2 mm wide. Cypsela immature, ca. 2 mm long, with wings to 1.5 mm wide, glabrous; awns of pappus straight, 2.0–3.5 mm long.

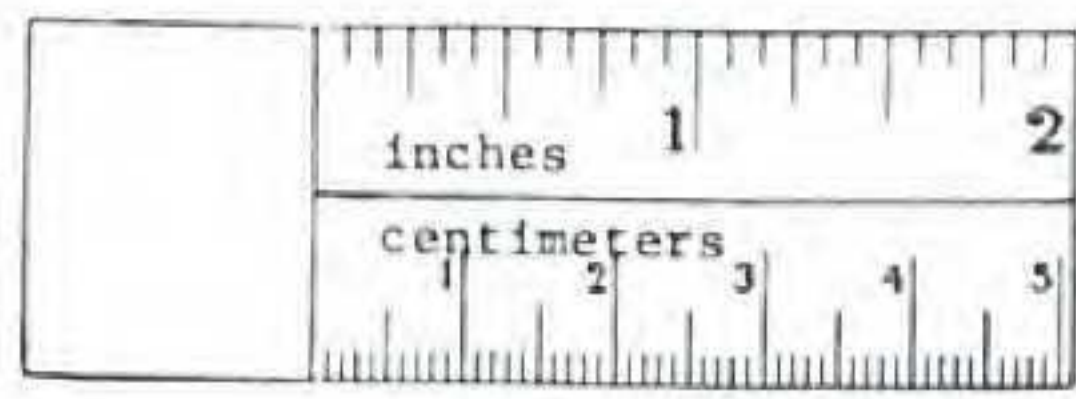
PARATYPE: **Ecuador**. Prov. CARCHI: above Maldonado, in secondary cloud forest and pastures, 2500 m, 1 Aug 1989, *van der Werff & Gudiño 10852* (US).

Verbesina maldonadoensis is known only from secondary cloud forests at 2100–2500 m elevation in the western part of the Province of Carchi near the Colombian border. The species probably also occurs in the immediately adjacent areas of Colombia. The rather small heads with white ray florets, alternate leaves, and the sometimes very long petioles distinguish this species.

Verbesina pichinchensis H. Rob., *sp. nov.* TYPE: ECUADOR. Prov. Pichincha: Páramo and shrub vegetation on eastern slopes of Cerro Pichincha, 3600–4000 m, 26 Jan 1977, *G. Harling, U. Eliasson, & L. Andersson 14832* (HOLOTYPE: US; ISOTYPE: GB).
Figure 4.

Ad *Verbesinam* ecuatorianam simila sed in foliis suboppositis in foliis plus ovatis et in ramis inflorescentium densius tomentosus distincta.

Shrubs to 2 m tall, moderately branching; stems pale brownish, terete, unwinged, densely lanulose with pale slender hairs, internodes between pairs of leaves 3–5 cm long, internodes between leaves of pairs ca. 0.5–1.0 cm long. Leaves subopposite, petioles 1–2 cm long; blade narrowly ovate, 8–14 cm long, 2.5–4.5 cm wide, base short-acute, slightly acuminate on petiole, margins closely serrulate from below widest part, apex acute, upper surface dark green, densely scabridulous with sharp hairs of many sizes, lower surface paler, almost completely covered with bases of hairs, subtomentose to sublanulate with long and short hairs, main secondary veins 5 or 6 on each side, ascending at 25–40°, with a few smaller closely spreading secondaries nearer base. Inflorescence terminal and from upper axils on leafy stems, broadly corymbiform with many heads, to 13 cm wide, with



Holotype:
Verbesina pichinchensis
 H. Rob. & Panero

UNITED STATES NATIONAL HERBARIUM
Verbesina leucostriata Legostyev
 det. José L. Panero 1991

FLORA OF ECUADOR

1950? *Verbesina arborea* HBK

1950? 1950: Frs. and shrub vegetation on the eastern slopes of
 Cerro Pichincha, alt. 3600 - 4000 m.s.m.
 Frs. pale yellow, calyx pale yellow.

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Figure 4. *Verbesina pichinchensis* H. Rob., holotype, United States National Herbarium (US).

branches ascending, tomentose; peduncles 0–12 mm, covered with dense pale tomentum. Heads campanulate, 9–11 mm high, 7–8 mm wide; involucre bracts ca. 15, in 2–3 series, oblong to oblong-lanceolate, 4–6 mm long, 1.5–2.0 mm wide, apices obtuse, densely puberulous to sublanulate outside and near tip inside, inner bracts acute, densely puberulous outside; pales similar to inner involucre bracts, to 8 mm long. Ray florets 0–3; corolla fertile, yellow, tube ca. 2.5 mm long, pilosulous, limb oblong, ca. 5 mm long, 2.5 mm wide, sparsely puberulous. Disk florets ca. 15; corolla yellow, 4.5–5.0 mm long, tube ca. 1.5 mm long, pilosulous, limb sparsely puberulous, throat ca. 3.5 mm long, lobes 0.5 mm long and wide, with dense fringe of long papillae on inner margins; anther thecae black, ca. 2 mm long; apical appendage mostly yellowish, partially black. Cypsela (immature) 6 mm long, ca. 1.5 mm wide, with few slender hairs on sides, wings present; pappus with 2 awns, straight, 4.5–5.0 mm long.

PARATYPE: **Ecuador**. Prov. PICHINCHA: Pichincha, 30 Oct 1930, *R. Benoist s.n.* (P, US).

Verbesina pichinchensis is known from páramo and shrub vegetation at 3600–4000 m on Mt. Pichincha in north-central Ecuador. The specimens were determined at one time as *V. ecuatoriana* Sagást. (Sagástegui-Alva 1970), to which they seem closely related, but the leaves are subopposite with long internodes between the pairs, the leaf blades are more ovate, and the branches of the inflorescence have denser and longer tomentum. The habit is also similar to the common *V. sodiroi* Hieron., but the latter has 10–15 ray florets in a head.

Verbesina perijaensis H. Rob. *sp. nov.* TYPE: COLOMBIA. Dept. Cesar: “Magdalena”, Sierra de Perijá, east of Manaure, Quebrada de Floridablanca, Andean forest and bushes, 2700–2800 m, 11 Nov 1959, *J. Cuatrecasas & R. Castaneda 25236* (HOLOTYPE: US). Figure 5.

In caulibus et foliis glabris ad *Verbesinam laevifoliam* et *V. negrensis* et *V. simulans* simila sed in bracteis involucri exterioribus 6–8 erectis obovatis et floribus radii ca. 14 in corollis longis et albis vel lilacinis differt.

Trees 2–3 m tall, with pendulous branchlets; stems brownish, glabrous, weakly angled. Leaves alternate, petioles 5–7 mm long;



Figure 5. *Verbesina perijaensis* H. Rob., holotype, United States National Herbarium (US).

blades subcoriaceous, oblanceolate, 6–9 cm long, 2–3 cm wide, base slightly acuminate, margins serrulate, apex acute, surfaces glabrous, shining, dark yellowish green above, veinlets forming dark reticulum below; venation pinnate, 6–8 upwardly curving secondary veins on each side. Inflorescence from apex and upper axils of leafy branches, laxly corymbiform with few large heads; branches glabrous at base, branchlets sparsely hirsute on one or more sides; peduncles 1–4 cm long. Heads broadly campanulate, 1.2–1.5 cm high, 2–3 cm wide; involucre of 6–8 spreading rounded herbaceous outer bracts, to 10 mm long, ca. 8 mm wide, mostly glabrous with some hairs near base and distal margins, apex rounded to obtuse, ca. 8, more erect, darker, obovate, glabrous, inner bracts with rounded thinly herbaceous often slightly recurved tips, 8–9 mm long, 5 mm wide above middle, with pale margins below; pales narrowly oblong, ca. 9 mm long, paler base clasping floret, distal 3 mm flat, darker, oblong, shortly acute. Ray florets ca. 14 in a head; corollas white or lilac, tube ca. 2 mm long, hirsutulous, limb narrowly elliptical, ca. 19 mm long, 4 mm wide. Disk florets ca. 40; corollas ca. 6.8 mm long, tube ca. 2 mm long, hirsutulous, throat ca. 3.5 mm long, lobes ca. 0.8 mm long, with fringes of long papillae on inner margins; anther thecae ca. 2.8 mm long; apical appendage rather pale, ca. 0.45 mm long, ca. 0.35 mm wide. Cypsela ca. 5.5 mm long, glabrous, wing immature; pappus awns 2–3 mm long.

Verbesina perijaensis is known only from the type, collected in the Perija region along the Venezuelan border. It appears to be related to some species in the Venezuelan Andes with glabrous leaves such as *V. laevifolia* S. F. Blake and *V. negrensis* Steyerm. of Venezuela (Aristeguieta 1964) which lack ray florets, and *V. simulans* S. F. Blake which has small white rays. The new species differs from all of these by the large white rays and the very large foliose involucre bracts.

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